may find a certain physical association existing among them notwithstanding their dissimilarity of orbit. The most significant fact in connection with this subject is that certain sharply-defined points exhibit a numerous retinue of showers, while the spaces immediately adjacent are comparatively barren of such displays. The radiant points coincide at particular centres, to the marked exclusion of closely-bordering regions. To re-observe with the utmost fulness and accuracy the evidence which the sky affords, leading to this remarkable conclusion, and to discover, if possible, the *meaning* of this singular persistency of showers, will be the important aim of future observations; it may clear away a difficulty from observers, and perhaps enlarge our views as to the visible character of meteor systems. The uninterrupted appearance of shooting-stars in the nocturnal sky offers the ready means of attacking the problem anew and removing any doubts which may still exist as to the stationary, long-enduring aspect of many showers, which must, indeed, remain an indelible effect of all full and trustworthy observation.

*Bristol*: 1884, *October*.

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## *Observations of Comets Pons-Brooks and Ross.* By A. B. Biggs.

(*Communicated by the Secretaries.*)

(*By triangular-bar Micrometer. Dark field.*)

| Date. | Mean Time. (Launceston.) | Diff. R.A. Comet from Star. | Diff. Decl. Comet from Star. | Name of Star. | Hour Angle. (Approx.) |
|---|---|---|---|---|---|
| 1884. | h m | m s | ′ ″ | | h m |
| Jan. 26 | 9 52 0 | + 1 33·25 | +36 58·6 | 7 Ceti | |
| | 9 56 0 | + 1 36 | +37 9·4 | ,, | |
| 29 | 8 52 0 | − 2 51·5 | −22 30 | 106 Lacaille | 5 2 W. |
| | 8 57 0 | − 2 49·7 | −21 59 | ,, | 5 8 |
| | 9 4 10 | − 2 47·5 | −21 0·8 | ,, | 5 15 |
| Feb. 11 | 8 45 23 | − 0 19·3 | +28 59 | 305 Lacaille | 5 9½ |
| | 8 55 21 | − 0 18·3 | +29 36 | ,, | 5 19½ |
| 23 | 10 10 0 | + 3 15·7 | +28 56 | γ Phenicis | 6 54½ |
| | 10 16 45 | + 3 16·5 | +29 19·6 | ,, | 7 0 |
| Mar. 2 | 9 53 0 | − 3 30 | −12 57 | 542 Lacaille | 7 0 |
| 11 | 8 17 30 | + 8 32·7 | −17 41 | 588 ,, | 5 35 |
| 12 | 7 35 30 | −10 5·5 | + 9 27 | 693 ,, | 4 53 |
| 13 | 8 13 0 | − 7 15·5 | +39 57 | ,, | 5 34 |
| | 8 28 0 | − 7 18·5 | +40 43·5 | ,, | 5 53½ |

| Date. 1884. | Mean Time. (Launceston.) | Diff. R.A. Comet from Star. | Diff. Decl. | Name of Star. | Hour Angle. (Approx.) |
|---|---|---|---|---|---|
| | h m | m s | ′ ″ | | h m |
| Apr. 3 | 8 48 45 | − 0 4 | −11 36″ | 989 Lacaille | 6 38 |
| | 8 57 45 | − 0 3·3 | −10 1 | „ | 6 47 |
| 4 | 8 50 20 | + 3 33 | +10 15 | „ | 6 29 |
| | 8 59 20 | + 3 45·5 | +10 34 | „ | 6 48 |
| | | *Comet "Ross."* | | | |
| Feb. 1 | 9 15 0 | + 0 14·7 | +19 43 | 9623 Lacaille | 6 14 |
| | 9 25 0 | + 0 17 | +18 24 | „ | 6 24 |

A very hazy object; nebulous; measures very difficult; no definite point. The only opportunity afforded for obtaining measures.

In all the above measures, different refraction and the comet's proper motion are not reckoned for.

*Launceston, Tasmania*: 1884.

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## *Ephemeris for Finding the Positions of the Satellites of Uranus*, 1885.

By A. Marth.

The angle of position P of the minor axes, the major and minor semi-axes $a$ and $b$ of the apparent ellipses described by the satellites, the longitudes $u$—U of the satellites reckoned in their orbits from the points which are in superior conjunction with the planet's centre and the planeto-centric latitude of the Earth above the assumed plane of the orbits, are approximately the following:

| Greenw. noon 1885. | P. | *Ariel.* $a_1$ | $b_1$ | $u_1$−U | Diff. | *Umbriel.* $a_2$ | $b_2$ | $u_2$−U | Diff. |
|---|---|---|---|---|---|---|---|---|---|
| | ° | ″ | ″ | ° | ° | ″ | ″ | ° | ° |
| Jan. 13 | 285·45 | 14·75 | +4·29 | 114·70 | 1428·46 | 20·54 | +5·97 | 134·01 | 868·75 |
| 23 | ·46 | 14·87 | 4·30 | 103·16 | ·44 | 20·72 | 5·99 | 282·76 | ·72 |
| Feb. 2 | ·47 | 14·99 | 4·28 | 91·60 | ·41 | 20·89 | 5·97 | 71·48 | ·70 |
| 12 | ·48 | 15·09 | 4·24 | 80·01 | ·38 | 21·03 | 5·91 | 220·18 | ·69 |
| 22 | ·50 | 15·18 | 4·18 | 68·39 | ·35 | 21·14 | 5·83 | 8·87 | ·66 |
| Mar. 4 | ·51 | 15·24 | 4·10 | 56·74 | ·33 | 21·23 | 5·71 | 157·53 | ·65 |
| 14 | ·53 | 15·27 | 4·00 | 45·07 | ·30 | 21·27 | 5·58 | 306·18 | ·63 |
| 24 | 285·54 | 15·28 | +3·89 | 33·37 | ·27 | 21·28 | +5·43 | 94·81 | ·61 |
| Apr. 3 | ·55 | 15·26 | 3·78 | 21·64 | ·26 | 21·26 | 5·27 | 243·42 | ·61 |
| 13 | ·56 | 15·21 | 3·67 | 9·90 | ·24 | 21·19 | 5·11 | 32·03 | ·60 |
| 23 | ·57 | 15·14 | 3·56 | 358·14 | ·23 | 21·10 | 4·96 | 180·63 | ·60 |
| May 3 | ·57 | 15·05 | 3·46 | 346·37 | ·23 | 20·97 | 4·82 | 329·23 | ·60 |
| 13 | ·57 | 14·95 | 3·37 | 334·60 | ·22 | 20·82 | 4·70 | 117·83 | ·60 |
| 23 | ·58 | 14·83 | 3·31 | 322·82 | 1428·22 | 20·66 | 4·61 | 266·43 | 868·61 |
| June 2 | 285·57 | 4·70 | +3·26 | 311·04 | | 20·48 | +4·54 | 55·04 | |